

**APPLICATION FOR AN  
AGRICULTURAL WATER CONSERVATION  
FEASIBILITY STUDY GRANT**

FOR

**KINGS COUNTY WATER DISTRICT**

200 North Campus Drive  
Hanford, CA 93230-5999



SUBMITTED TO THE:

DEPARTMENT OF WATER RESOURCES

UNDER THE

SAFE DRINKING WATER, CLEAN WATER, WATERSHED PROTECTION  
AND FLOOD PROTECTION ACT (PROPOSITION 13)

February 28, 2002

Prepared By:



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## PART ONE

**A. Project Information Form**

1. Applying for (select one):
- ☐ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
- ☒ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
- ☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Kings County Water District
3. Project Title: Peoples Weir Modification Feasibility Study
4. Person authorized to sign and submit
- |                 |  |
|-----------------|--|
| Name, title     | Don Mills, General Manager                       |
| Mailing address | 200 North Campus Drive<br>Hanford, CA 93230-5999 |
| Telephone       | (559) 584-6412                                   |
| Fax             | (559) 584-6882                                   |
| E-mail          | kcwdh2o@cnetech.com                              |
5. Contact person (if different):
- |                 |  |
|-----------------|--|
| Name, title     | Brian Ehlers, P.E.                                       |
| Mailing address | 286 W. Cromwell Ave<br>Fresno, CA 93711                  |
| Telephone       | (559) 449-2700   |
| Fax             | (559) 449-2715   |
| E-mail          | <a href="mailto:behlers@ppeng.com">behlers@ppeng.com</a> |
6. Funds requested (dollar amount): \$74,957
7. Applicant funds pledged (dollar amount): \$11,500<sup>1</sup>
8. Total project costs (dollar amount): \$86,457

<sup>1</sup> This amount includes \$1,500 in contingency costs.

9. Estimated total quantifiable project benefits (dollar amount):	to be determined <sup>2</sup>
Percentage of benefit to be accrued by applicant:	100 %
Percentage of benefit to be accrued by CALFED or others:	N/A <sup>3</sup>
10. Estimated annual amount of water to be saved (acre-feet):	to be determined <sup>4</sup>
Estimated total amount of water to be saved (acre-feet): over <u>N/A</u> years.	to be determined
Estimated benefits to be realized in terms of water quality, in stream flow, other:	Unknown
11. Duration of project (month/year to month/year):	(03/02-09/03)
12. State Assembly District where the project is to be conducted:	30 <sup>th</sup> District
13. State Senate District where the project is to be conducted:	16 <sup>th</sup> District
14. Congressional district(s) where the project is to be conducted:	20 <sup>th</sup> District
15. County where the project is to be conducted:	Kings
16. Date most recent Agricultural Water Management Plan submitted to the Department of Water Resources:	1993
17. Type of applicant (select one): Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:	<input type="checkbox"/> (a) city <input type="checkbox"/> (b) county <input type="checkbox"/> (c) city and county <input type="checkbox"/> (d) joint power authority <input checked="" type="checkbox"/> (e) other political subdivision of the State, including public water district <input type="checkbox"/> (f) incorporated mutual water company <input type="checkbox"/> (g) investor-owned utility
DWR WUE Projects: the above	

<sup>2</sup> It is anticipated that \$1.25 million dollars could be the project benefits, but this is still to be determined.

<sup>3</sup> This project's quantifiable benefits are locally cost-effective.

<sup>4</sup> It is anticipated that 2,500 AF may be saved, but this is still to be determined.

Entities (a) through (f) or:

- ☐ (h) non-profit organization
- ☐ (i) tribe
- ☐ (j) university
- ☐ (k) state agency
- ☐ (l) federal agency

18. Project focus:

- ☒ (a) agricultural
- ☐ (b) urban

19. Project type (select one):  
Prop 13 Urban Grant or Prop 13  
Agricultural Feasibility Study Grant  
Capital outlay project related to:

- ☐ (a) implementation of Urban Best
- ☒ (b) implementation of Agricultural Efficient  
Water Management Practices
- ☐ (c) implementation of Quantifiable  
Objectives (include QO number(s))  
\_\_\_\_\_

☐ (d) other (specify)  
\_\_\_\_\_

DWR WUE Project related to:

- ☐ (e) implementation of Urban Best  
Management Practices
- ☐ (f) implementation of Agricultural Efficient  
Water Management Practices
- ☐ (g) implementation of Quantifiable  
Objectives (include QO number(s))
- ☐ (h) innovative projects (initial  
investigation of new technologies,  
methodologies, approaches, or  
institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information  
programs
- ☐ (k) other (specify)  
\_\_\_\_\_

20. Do the actions in this proposal involve  
physical changes in land use, or  
potential future changes in land use?

- ☐ (a) yes
- ☒ (b) no

If yes, the applicant must complete the  
CALFED PSP Land Use Checklist found at  
[http://calfed.water.ca.gov/environmental\\_docs.htm](http://calfed.water.ca.gov/environmental_docs.htm)  
and submit it with the proposal.

**Consolidated Water Use Efficiency 2002 PSP  
Proposal Part One  
Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

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Signature

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Name and title

---

Date

## PART TWO

### Project Summary

The Kings County Water District (KCWD) is located in the northeastern portion of Kings County (Figure 1). Water supplies for the District consist of entitlements in district and canal companies that have water rights on the Kings River. The water delivery system consists of numerous canals that traverse the District from northeast to southwest. A map showing the distribution system is shown on Figure 2. As shown on Figure 2, all of the systems are supplied water from the Peoples Ditch that originates adjacent to the Peoples Weir (Weir) located on the Kings River just downstream of State Highway 99. The Weir is a concrete gravity structure that controls water levels by pulling and/or installing wooden weir boards. Because the weir boards are large and difficult to move, the settings are not changed often. Due to fluctuating flow conditions to the District and other users downstream, significant fluctuations in the pond level behind the weir are experienced. These fluctuations in pond level lead to vastly changing flow conditions through the headworks to the Ditch.

The proposed project entails studying the feasibility of automating a canal structure, an eligible Agricultural Efficient Water Management Practice. The goal of the proposed study is to identify the magnitude of the water losses to the District and whether it is cost effective to conserve such losses. The goal is to ascertain if regulating the Weir is a feasible and beneficial method of recovering losses.

This study will investigate the feasibility of automating two bays of the Weir to allow diversions to match demands. The feasibility study will involve collecting and evaluating data from the Kings River Water Master Reports and Peoples Ditch Company. A comparison, of requested flows by the District with actual flows passing over the Peoples Ditch diversion point, will be made to validate this assumption. Potential water savings are still to be determined, however the district engineer estimates a conservative potential savings of 2-5%. The study will also include determination of environmental and local impacts and address compliance with federal, state and local laws. Quarterly, annual and final reports will also be written and submitted to DWR. If the study proves feasible, preliminary engineering plans of the proposed modification will be developed.

The expected outcome is a feasible project recommending the installation of two radial gates that would provide a more regulated water supply for the District, downstream users, and the Kings River Water Association. This evaluation will also have application to the other 10 weirs of similar construction on the Kings River. Other benefits are a decrease in dry-year water supply diversions from the State water supply, and a more regulated supply for downstream river users. It is also expected that the benefits to the District will be greater than the costs.



### ***A. Relevance and Importance***

The proposed project will study the feasibility of automating a canal structure, an eligible Agricultural Efficient Water Management Practice. The District estimates that as much as 2-5% of additional, unused flows pass through the District's canal system by way of Peoples Ditch under current operations. The Weir is a manually operated concrete weir with wooden weir boards, and flows are not regulated when water levels rise or fall. If the water level in the Kings River is not high enough to flow over the Weir, water supplies are shorted to the distribution system. The system, much of the time, spills water over the weir. At the extreme, when other river units are taking water, the height of spill over the weir is increased which also causes more diversion through the Peoples Headgate. These excess flows are billed to the District but pass on out of the District. These supplies then do not become available for use.

The nature of the project is two-fold; (1) Determine the amount of unaccounted for water diverted to the distribution system serving Kings County Water District, and (2) Study the feasibility of automating Peoples Weir to regulate flows diverted to the District. The District's objective is to mitigate water losses within the system by incorporating the tasks described in Table 2. The District expects to be able to improve accountability for water usage within the system which is consistent with the District's Water Management Plan of 'endeavoring to practice sound water management practices'. The project covers a 1 \_ -year period and is relevant to District and to other Kings River water users.

## **Figure 1**

**- Regional Project Location here.**

## Figure 2 – Local Project location map

## ***B. Technical/Scientific Merit, Feasibility, Monitoring & Assessment***

### **1. Methods and Procedures**

Phase 1 encompasses collecting data (beginning March 2002) daily for one complete water year and developing a spreadsheet model to analyze the system. This data collection includes a daily tabulated record of flows requested by the Peoples Ditch manager from the Kings River Water Master. Data collection also includes measuring flows daily at the Peoples Ditch Diversion Point. Since the water deliveries typically begin in March, the data collection is expected to commence immediately. Throughout the year the data will be recorded in spreadsheets and evaluated on a quarterly basis facilitating progress report submittals to DWR. In the first three quarterly reports, an update will be given on the data collection progress and quantification of water losses. A method will also be developed in this phase to characterize the existing and proposed systems in the form of a spreadsheet model. Also included in this phase will be a determination of local support from downstream users on the Kings River. This phase will end with a summary report of calculated water losses for the entire water year (March 2002 –2003), the results of the simulation model, and the local support on the Kings River.

Phase 2 will begin with evaluating other alternatives to meet project goals. Project impacts on the local agricultural community will be addressed. Water savings, based on the irrecoverable losses identified in Phase 1, will be compared to the cost of designing and installing radial weir gates. A benefit/cost (B/C) analysis will be completed. If the B/C ratio is over 1.0, preliminary engineering plans will be drafted and an engineer's cost estimate completed. Environmental impacts and requirements of the project will also be addressed. All work will comply with CEQA requirements. Permits, licenses and approvals and local, state and federal laws will also be identified. During this phase quarterly progress reports that address fiscal and programmatic issues will be completed. Finally, a feasibility study report incorporating both phases will be submitted to DWR and other agencies as appropriate.

### **2. Facilities**

The existing facilities include a weir that is approximately 400 feet long with thirty-six 11-foot bays. Timber weir boards are set in grooves and are manually removed or added to control the height and flow of the water through the dam. However, the structure was built in the 1920s, and the weir boards are heavy and difficult to set manually. Usually the boards are set seasonally and not adjusted for variable flows. The proposed alternative, if the project is deemed feasible, is to regulate flows on a daily basis with two radial gates that would be automated.

### **3. Task List and Schedule**

The work plan for the proposed Agricultural Water Conservation Feasibility Study details the scope of work needed to identify water losses and study the feasibility of regulating Peoples Weir. The purpose of the feasibility study is to evaluate alternatives available and analyze the cost-effectiveness of constructing and operating such a facility. The results and conclusions from the completed tasks will be incorporated into the feasibility study report. The work plan for the proposed feasibility study details the work required to evaluate the automation project from an engineering, economic, environmental, institutional, and social basis.

The study will be accomplished through the following tasks:

- Task 1. Review existing information to refine the feasibility study purpose and identify the goals to be attained.
- Task 2. Develop a system for recording the daily delivery requests made by the Peoples Ditch manager for water year 2002 - 2003.
- Task 3. Determine the water actually supplied to the District by measuring daily flows at the Peoples Ditch Diversion point during water year 2002 - 2003.
- Task 4. Evaluate the difference between demand and actual flows at Peoples Ditch Diversion point.
- Task 5. Determine local support for the project from within the District and neighboring Kings River Units.
- Task 6. Develop a model to accurately analyze the existing and proposed regulating system.
- Task 7. Evaluate alternative means of meeting the project goals.
- Task 8. Determine project impacts on the local agricultural community.
- Task 9. Determine the costs and benefits of regulating Peoples Weir.
- Task 10. Determine engineering design criteria and complete preliminary design of weir regulation system.
- Task 11. Prepare preliminary engineer's cost estimate for construction, and operation & maintenance costs for the preliminary design of the weir regulating facilities.

- Task 12. Determine the environmental impacts and requirements of the project and any significant environmental issues that may arise. Prepare an Initial Study that will lead to a subsequent environmental document (either Negative Declaration or EIR) in compliance with CEQA.
- Task 13. Determine compliance with federal, state, and local laws.
- Task 14. Determine which permits, licenses, approvals, and agreements are needed for the project and probable requirements/conditions to secure such authorizations.
- Task 15. Consider construction methods and develop an estimated construction schedule; develop a construction inspection plan.
- Task 16. Prepare and submit quarterly progress reports to the Department of Water Resources (DWR).
- Task 17. Prepare and submit for review the draft feasibility study report to DWR and other agencies, as appropriate.
- Task 18. Prepare and submit for approval the final feasibility study report to DWR.

If in the event a determination is made that the project is not a feasible option, the District will discontinue work on the study. Discontinuing work on the feasibility study would require consultation with and approval from DWR and the District Board of Directors. Work on the feasibility study would stop except for the completion of a feasibility study report that would document the work complete to date and explain the non-feasible determination.

## Timetable

### **3. Monitoring and Assessment**

N/A – Not required for Prop 13 Agricultural Feasibility Study Grant

### **4. Preliminary Plans and Specifications and Certification Statement**

N/A – Not required for Prop 13 Agricultural Feasibility Study Grant



### ***C. Qualifications of the Applicants and Cooperators***

The experience and qualifications of the Kings County Water District (KCWD) engineering staff are demonstrated in the resumes attached in the Appendix. Provost & Pritchard Engineering Group, Inc. is the District Engineer for KCWD and will provide project management and engineering services for the proposed project.

Provost & Pritchard Engineering Group, Inc., began establishing a tradition of engineering excellence in Central California in 1968. Today, the company offers more registered engineers and local staff than any other engineering office in the San Joaquin Valley. Accordingly, we have developed expertise in a diversity of technical services.

The following is a summary of the project management:

#### **Project Manager**

Brian Ehlers, PE is a Principal Engineer with Provost and Pritchard Engineering Group, Inc., and he is the District Engineer for the Kings County Water District.

#### **Project Engineer**

Herb Simmons, PE is a Senior Engineer with Provost & Pritchard Engineering Group, Inc., and he currently provides support for Kings County Water District operations.

## ***D. Benefits and Costs***

### **1. Budget Breakdown and Justification**

Included as Table 1 is a breakdown of the proposed costs for the feasibility study.

### **2. Cost-Sharing**

The Kings County Water District will be supply 160 man-hours for collecting data at a total cost share of \$10,000.

## Cost breakdown

### **3. Potential Benefits to be Realized and Information to be Gained**

The expected outcome is a feasible project recommending the installation of two radial gates that would provide a more regulated water supply for the District, downstream users, and Kings River Water Association. Other benefits to be realized are water savings for the District, a decrease in dry-year water supply diversions from the state water supply, and conservation of water flowing to an irrecoverable source. These benefits have the potential to impact the CALFED Bay-Delta system positively.

### **4. Benefits Realized and Information Gained versus Costs**

The feasibility study will determine the amount of water potentially saved over a 50-year project and the most cost-effective method of modifying the weir to regulate flows reaching the District. Based on similar projects of scope and magnitude, a preliminary total estimated cost for a modified weir would range between \$500,000 and \$700,000 for installing a radial gate, structure modifications, appurtenances, and telemetry. It is also expected that the financial benefits to the District will be greater than the costs. The total estimated cost of the feasibility study is \$86,457 as shown in Table 1. The feasibility study will determine the feasibility of the proposed weir modification, whose benefits would include:

- Improve beneficial use of available water supplies.
- Conserve water flowing out of the District
- Provide more water to downstream users
- Decrease dry-water supply diversions from the state supply by both downstream users and the District

### ***E. Outreach, Community Involvement and Acceptance***

The ultimate goal of this project is to minimize unaccounted for water in the Kings County Water District (District) distribution system by identifying water lost to the District. The District plans to coordinate with local ditch companies in developing this feasibility study. A public meeting will be held by the District to hear issues or concerns by agricultural farmers or other landowners. Local groups and other interested organizations will be identified and their level of support or opposition addressed. Third party impacts are not expected to be an issue since this project would simply add easier access to flow regulation on the Kings River. The modifications are not expected to impact the local habitat or the environment.

APPENDIX
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## ***Resumes***

**TABLE 1**  
**KINGS COUNTY WATER DISTRICT**  
*Proposition 13 - Agricultural Water Conservation Feasibility Study*

Estimated Staffing Plan and Project Cost Breakdown

	Rate/hr	Principal I	Senior Engineer I	Associate Engineer II	Associate Technician II	Assistant Technician II	Clerical II	District Cost Share	Surveying	Mileage at \$0.45/mi.	Printing & Postage	Communications	Total Hours	Total Cost
		\$120	\$100	\$90	\$75	\$60	\$45							
Task 1	Review existing information	0	10	12	20	10	0	\$0	\$0	\$0	\$0	\$0	52	\$4,180
Task 2	Record delivery requests daily	0	0	0	0	0	0	\$10,000	\$0	\$0	\$0	\$0	0	\$10,000
Task 3	Determine water supply delivered to District	0	5	5	25	0	10	\$0	\$0	\$0	\$50	\$0	45	\$3,325
Task 4	Evaluate difference between demand and actual deliveries	0	10	10	25	10	0	\$0	\$0	\$0	\$0	\$0	55	\$4,375
Task 5	Determine local support	0	0	5	10	10	0	\$0	\$0	\$0	\$0	\$0	25	\$1,800
Task 6	Develop model	0	5	15	20	20	0	\$0	\$0	\$200	\$0	\$0	60	\$4,750
Task 7	Evaluate alternative means of meeting goals	0	5	5	10	10	0	\$0	\$0	\$0	\$0	\$0	30	\$2,300
Task 8	Project impacts	0	5	0	10	10	0	\$0	\$0	\$0	\$0	\$0	25	\$1,850
Task 9	Costs & Benefits	0		5	20	30	0	\$0	\$0	\$0	\$0	\$0	55	\$3,750
Task 10	Preliminary engineering design	0	10	5	40	55	0	\$0	\$10,000	\$0	\$0	\$0	110	\$17,750
Task 11	Preliminary engineer's cost estimate	0	5	5	0	0	0	\$0	\$0	\$500	\$0	\$2,000	10	\$3,450
Task 12	Environmental impacts	0	5	10	30	0	0	\$0	\$0	\$0	\$0	\$0	45	\$3,650
Task 13	Compliance with federal, state and local laws	0	5	5	10	0	0	\$0	\$0	\$50	\$0	\$0	20	\$1,750
Task 14	Permits, licenses, approvals etc.	0	5	10	5	0	0	\$0	\$0	\$0	\$0	\$0	20	\$1,775
Task 15	Construction methods	0	2	5	5	5	0	\$0	\$0	\$0	\$0	\$0	17	\$1,325
Task 16	Quarterly progress reports	0	5	5	0	0	10	\$0	\$0	\$500	\$0	\$2,000	20	\$3,900
Task 17	Draft feasibility study report	0	5	5	0	0	10	\$0	\$0	\$0	\$0	\$0	20	\$1,400
Task 18	Final feasibility study report	0	5	10	20	0	20	\$0	\$0	\$50	\$0	\$0	55	\$3,850
<b>Hours:</b>		0	87	117	250	160	50						664	\$75,180
<b>Cost:</b>								\$10,000		\$1,300	\$50	\$4,000		\$11,277

Contingencies (15% min): **\$11,277**  
TOTAL ESTIMATED FEASIBILITY STUDY COST: **\$86,457**



Funding is expected to begin in July.

\*Beginning in March, the District will begin data collection. This is their costshare contribution